

CERES Edition 3 Cloud Products

Edition 3 will start after V004 completes

- expect beta runs in June 2006



Proposed Edition 3 Cloud Algorithm Changes

- Account for V005 changes, use calibration information
- Hi-res cloud detection and retrieval for low clouds (250-m into 1 km)
- Multilayer cloud detection & retrieval
- Smoother polar transition
- Improved thin cloud opt depth, phase, and heights
- Refined thin cirrus detection & dust/cloud discrimination
- Improved clear-sky maps & general mask/retrieval & calibration upgrades
 - *use of MODIS surface albedo & aerosols?*
 - *use of scene-dependent snow albedos*
- Possible improvement of high-SZA optical depths

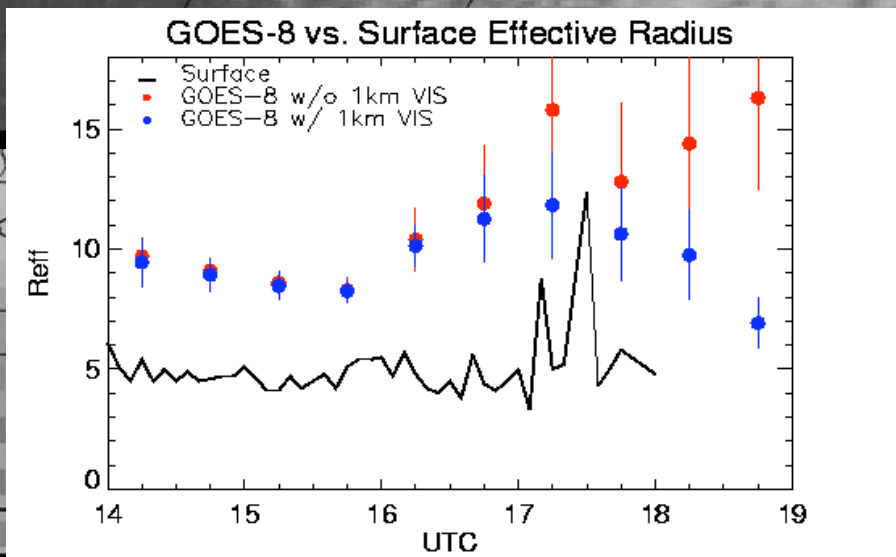
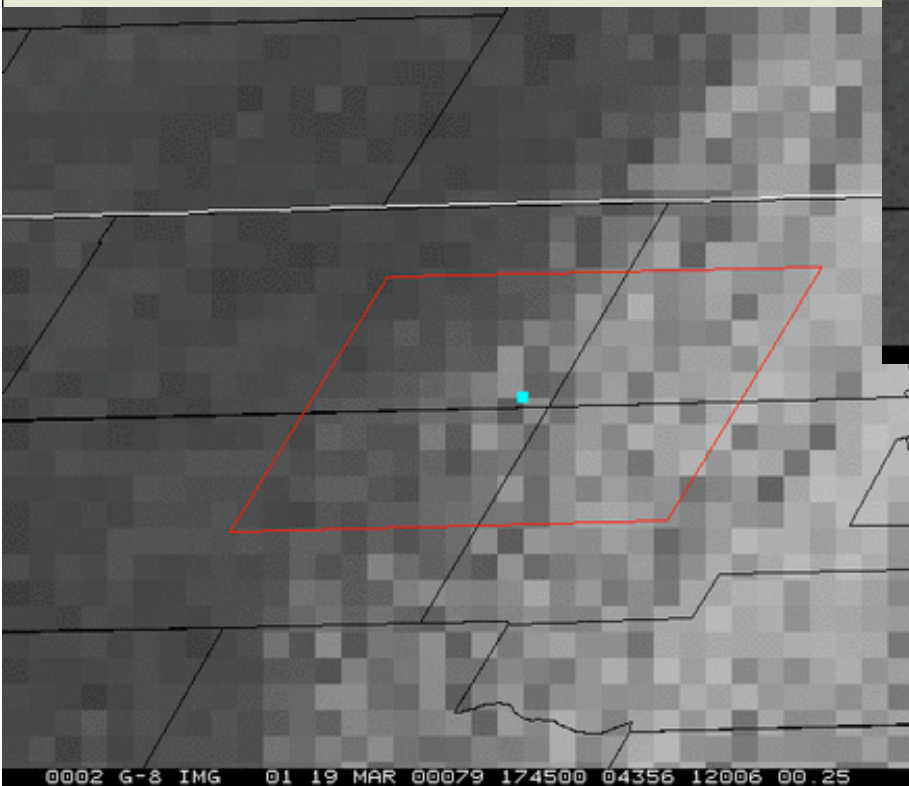
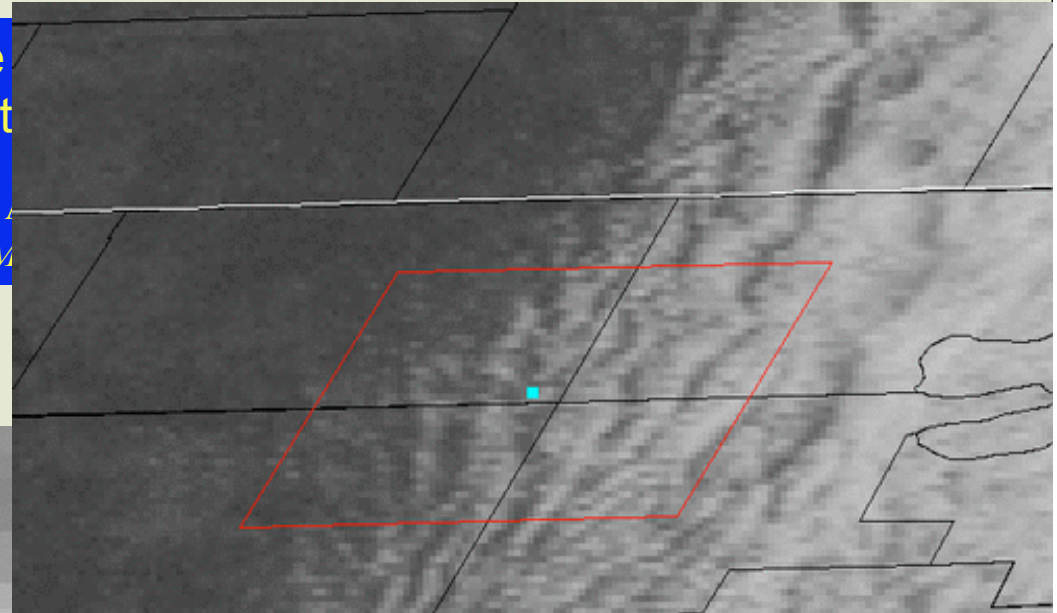


Hi-res cloud detection and retrieval for low clouds

- Use 250-m VIS data to determine clouds only to improve cumulus det

History: Nguyen, L., et al., 2002: A resolution imager data. *Proc. 11th AM*

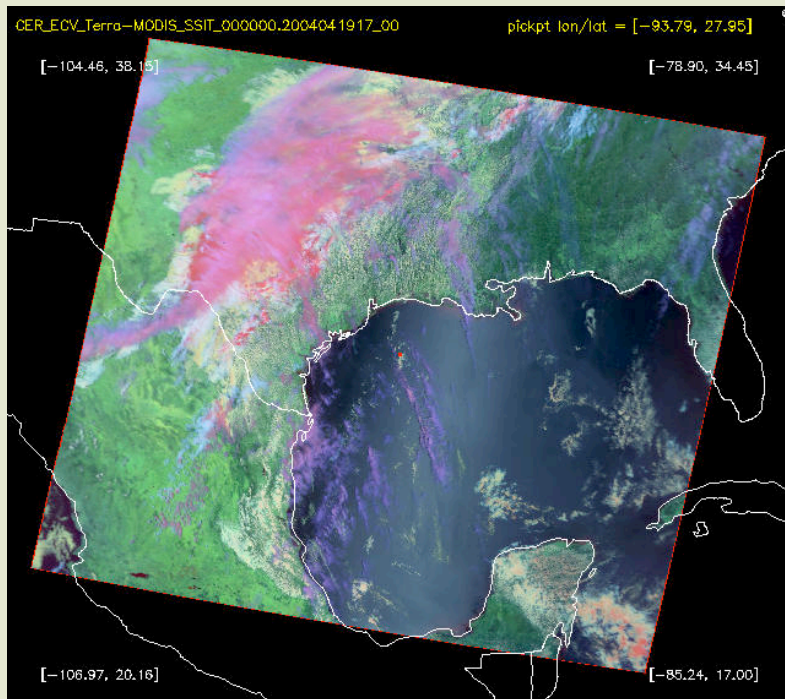
GOES-8 4 and 1 -km pixels



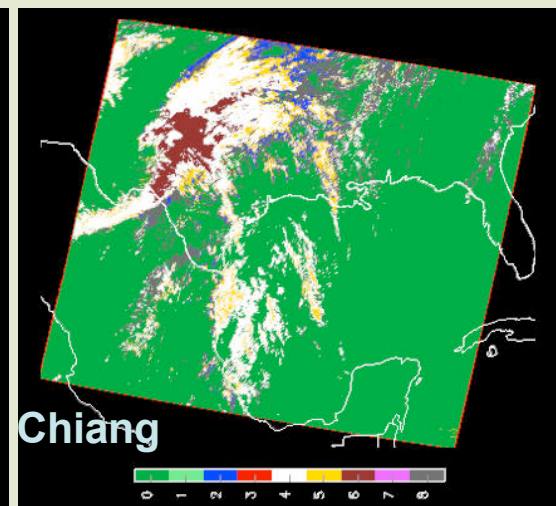
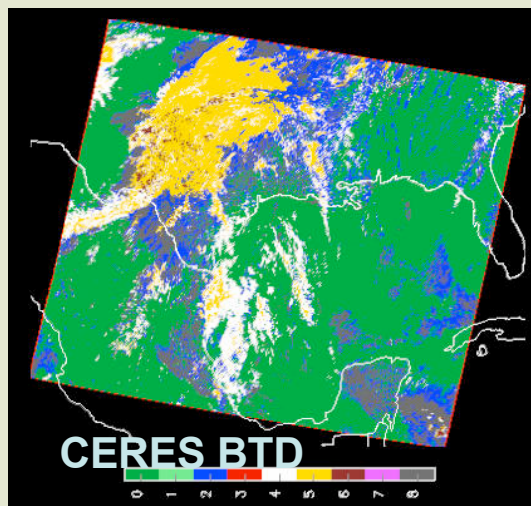
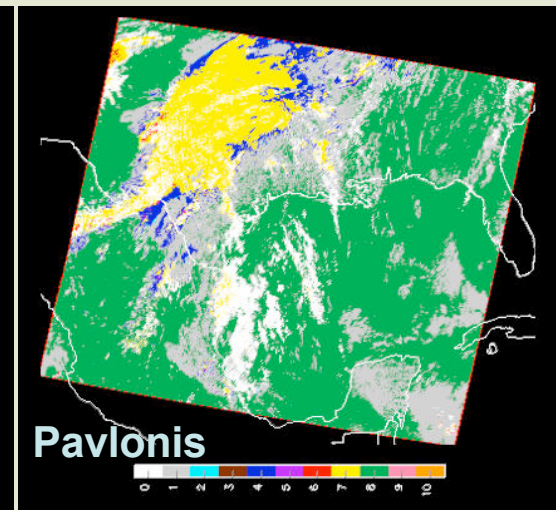
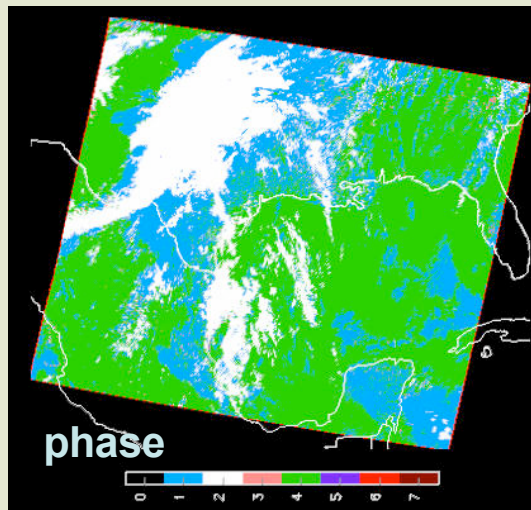
Multilayer cloud detection & retrieval

- Use MODIS channels to detect multilayer clouds & retrieve layer cloud properties

History: *Kawamoto et al. 2002; Pavlonis & Heidinger; Chiang & Li, 2005; Minnis et al., 2005; Fall 04/Spring 05 CERES STMs*

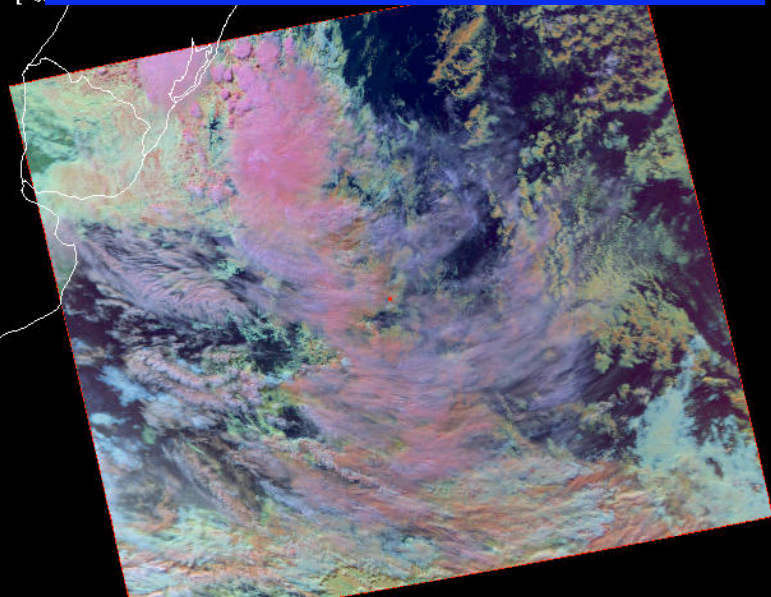


April 19, 2004 Terra

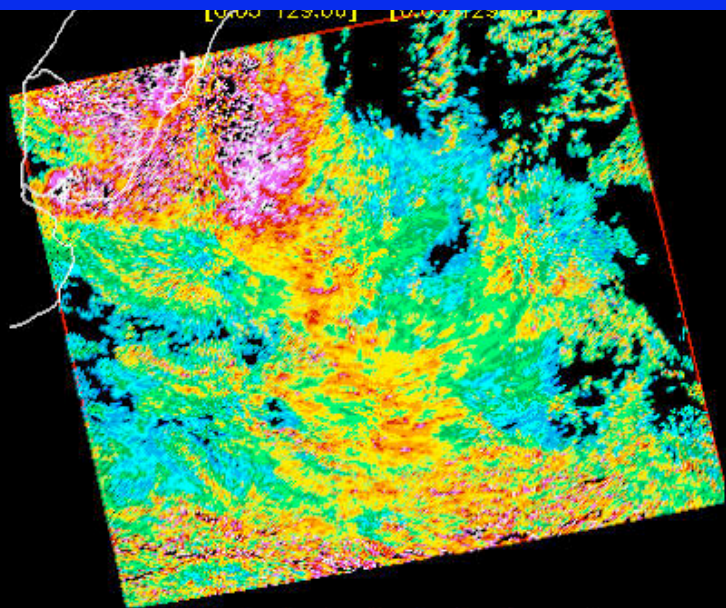


CERES
[5]

Aqua off Argentina, 7/13/04



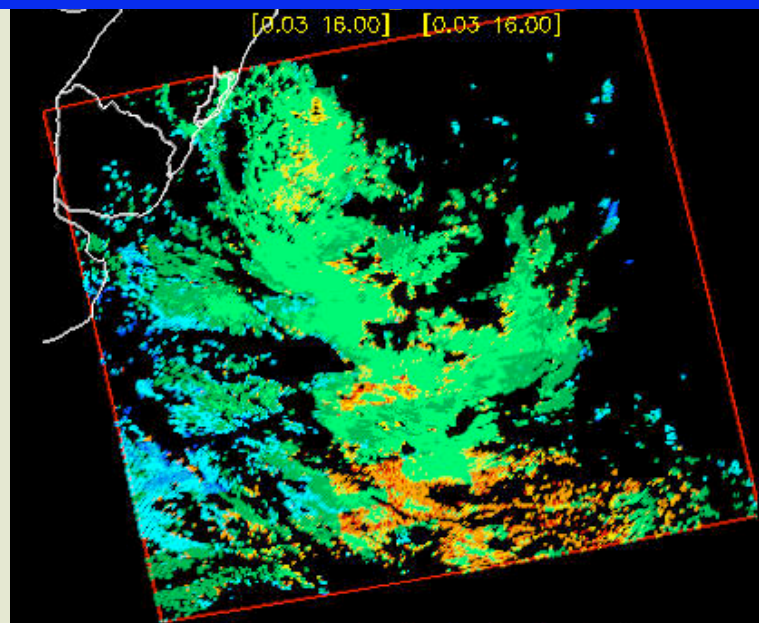
Cloud Opt Depth from VISST



**Use of nighttime algorithm to
derive thin cloud optical depths**

And refine VISST parameterization

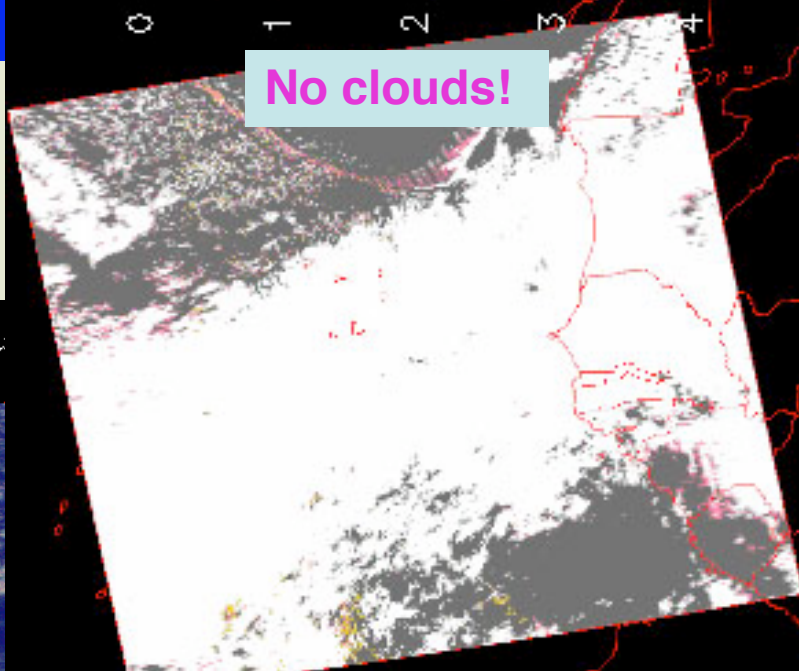
High Cloud Opt Depth from S1ST



CERES_Only_Cloud_Category



No clouds!

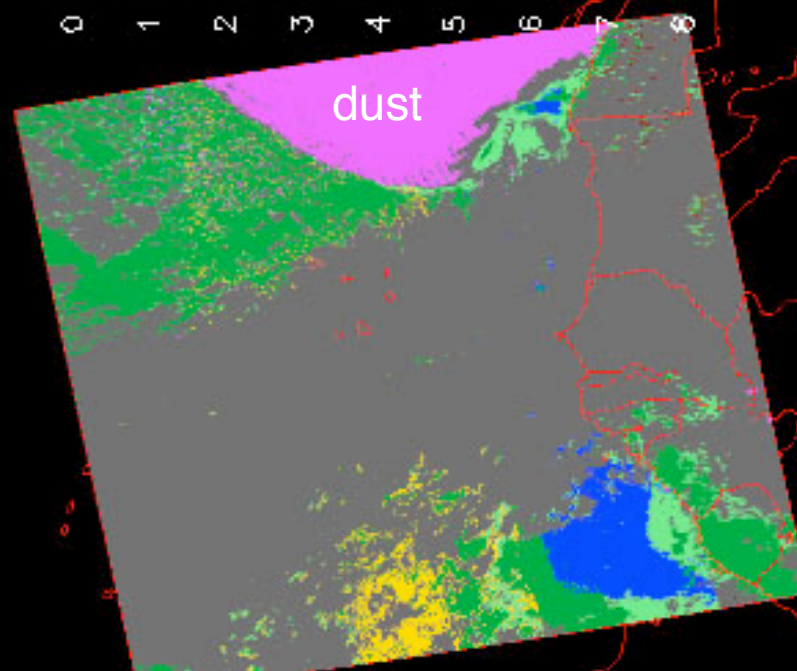


[-35.23, 21.59]

CERES_Only_Clear_Category

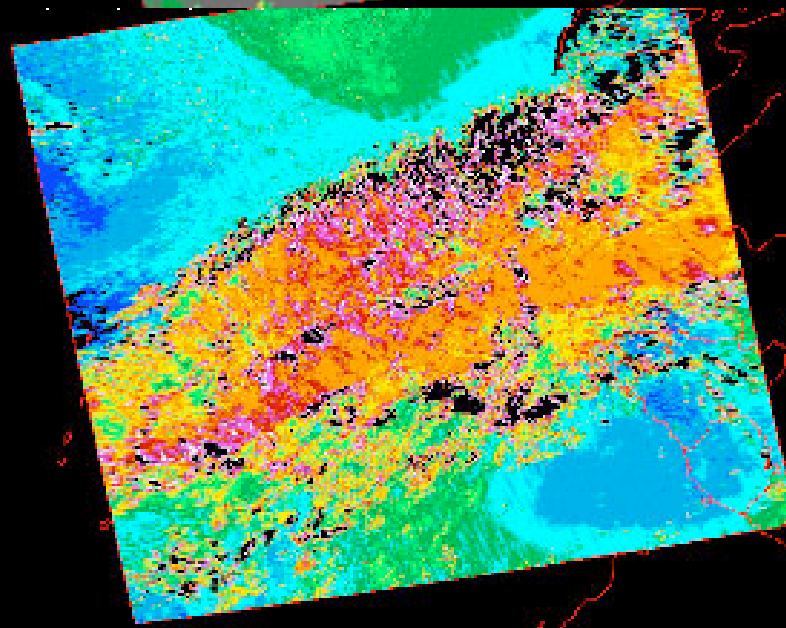
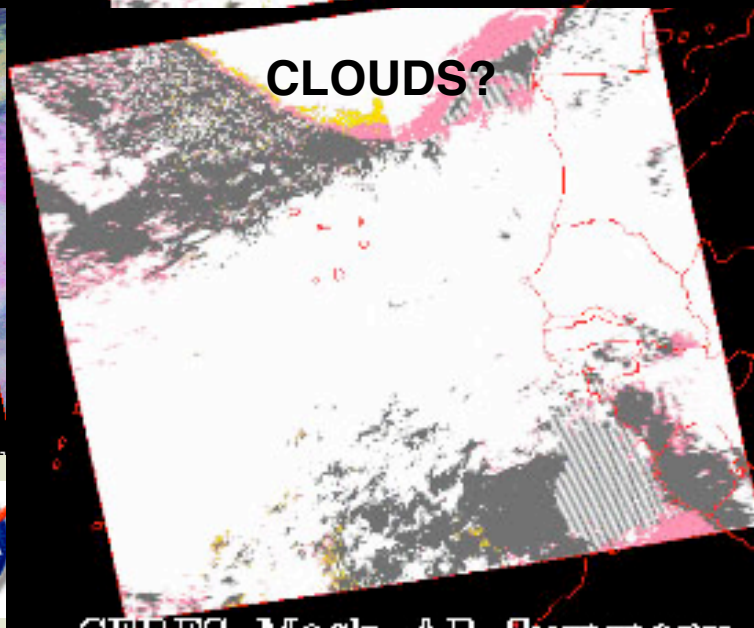


dust

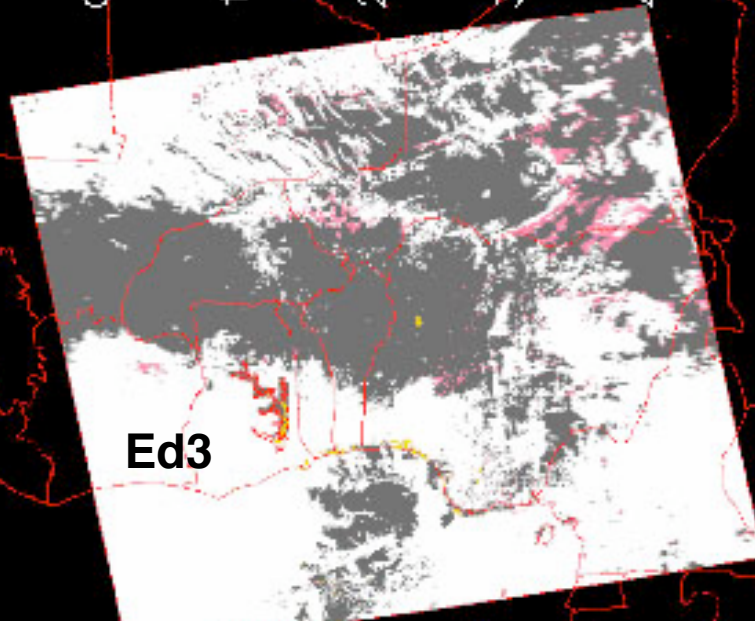


[86, 24.59]

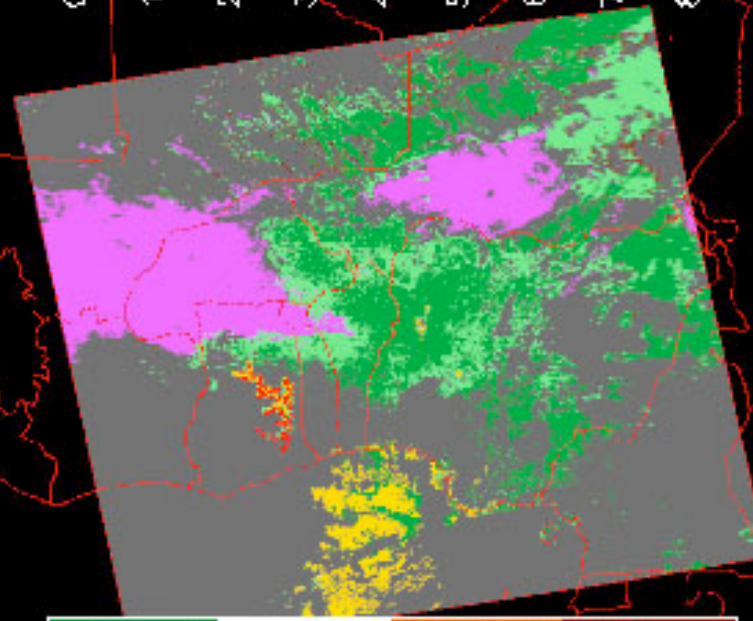
CLOUDS?



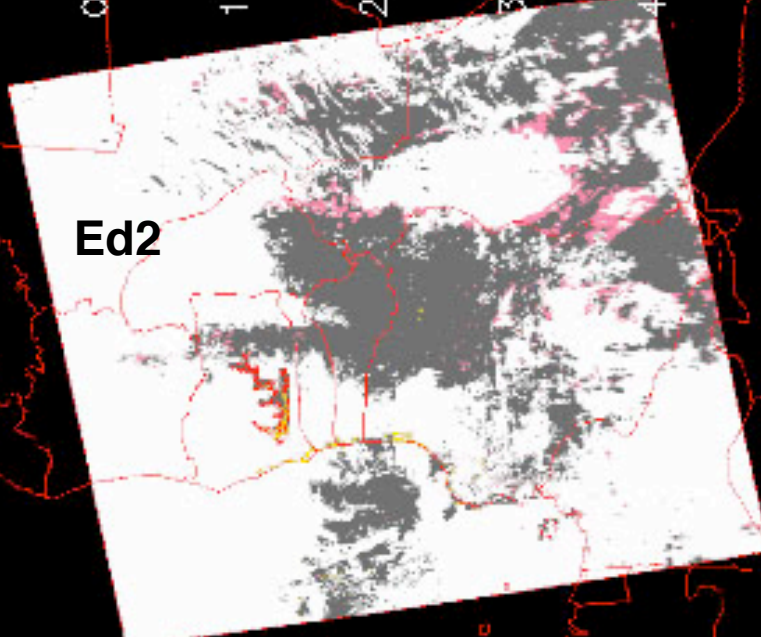
CERES_Only_Cloud_Category



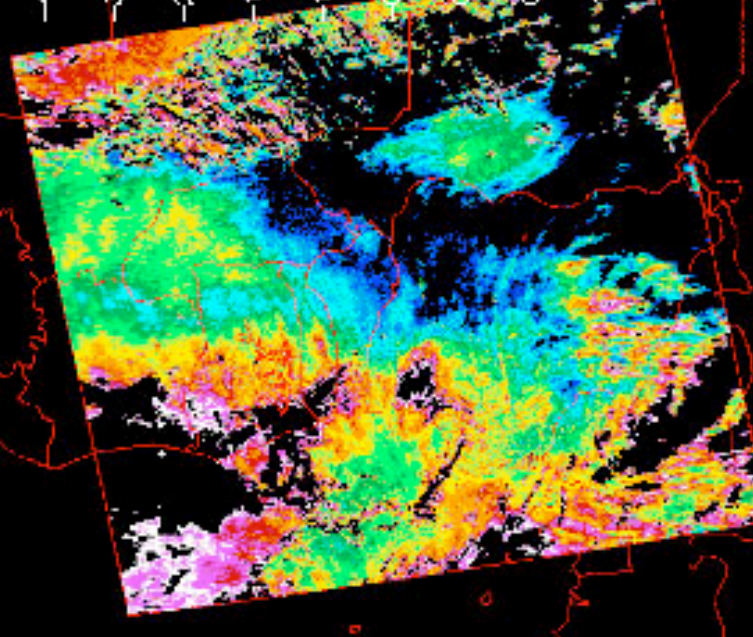
CERES_Only_Clear_Category



Clouds Mask AR Summary



Clouds Mask



[-9.29, 17.49, 20.57]

[-9.29, 17.49, 20.57]

[-4.87, 0.577, 2.61]

[-4.87, 0.577, 2.61]



OTHER ISSUES TO BE HANDLED IN ED3

- Smoother polar transition
- Refined thin cirrus detection, new channels
- mixed phase clouds in Arctic (flag only)
- General mask/retrieval & calibration upgrades
- 1.6 vs 2.1 μm : 2.1 only?
- Improved clear-sky
 - Use MODIS clear-sky or our maps
 - code changes in VIS parameterization
- Streamline code=> faster
- Team's suggestions

